

Application No.: 10/692,588

Docket No.: JCLA10198

REMARKSPresent Status of the Application

The Office Action rejected all presently-pending claims 1-14. Specifically, the Office Action rejected claims 1-14 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Also, the Office Action rejected claims 1-14 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Moreover, the Office Action rejected claims 1, 4-7 and 10-13 under 35 U.S.C. 102(e) as anticipated by or, in alternative, under 35 U.S.C. 103(a) as obvious over Kamiyama et al. (U.S. 6,340,501; hereafter Kamiyama). The Office Action further rejected claims 2, 3 and 8-9 under 35 U.S.C. 103(a) as being unpatentable over Kamiyama taken in view of Yamazaki (U.S. 2003/0010288; hereafter Yamazaki), Connell (U.S. 4,310,614; hereafter Connell), Hirokawa et al. (U.S. 5,230,923; hereafter Hirokawa) or applicants' description of prior art. The Office Action also rejected claim 14 as being unpatentable over Kamiyama taken in view of Hirokawa. Applicants have amended claims 1 and to overcome the rejections and to improve clarity. No new matter has been added to the application by the amendments made herein. After entry of the foregoing amendments, claims 1-14 remain pending in the present application, and reconsideration of those claims is respectfully requested.

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Summary of Applicant's Invention

The Applicant's invention is directed to an evaporation method and an apparatus thereof for improving the uniformity of a film deposited on a substrate. More specifically, in the evaporation method and the evaporation apparatus, a source supply device supplies an evaporation source along a source supplying direction directly onto a source evaporation point on the heater. It should be noticed that the projection of the source supplying direction and the overlaps with the tangent of the circular trace at the point on the circular trace, wherein the point on the circular trace on the substrate is located right above the heater.

Discussion of Office Action Rejections

The Office Action rejected claims 1-14 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Also, the Office Action rejected claims 1-14 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

In response thereto, Applicants have amended claims 1 and 7 to overcome this rejection. Thus, after entry the foregoing amendments, reconsideration of claims 1-14 is respectfully required.

The Office Action rejected claims 1, 4-7 and 10-13 under 35 U.S.C. 102(e) as anticipated by or, in alternative, under 35 U.S.C. 103(a) as obvious over Kamiyama.

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Applicants respectfully traverse these rejections but have amended claims 1 and 7 to clearly define the method according to the present invention. As amended, claims 1 and 7 recite:

Claim 1. An evaporation method, comprising:

providing a substrate, wherein the substrate is rotating along an axis at the center of the substrate and perpendicular to a plane of the top surface of the substrate;

defining a circular trace on the plane of the top surface of the substrate by using the center of the substrate as the center of the circular trace;

providing a heater right under a point on the circular trace;

providing a source supplying device, wherein the source supplying device supplies a metal wire as an evaporation source along a source supplying direction to a source evaporation point on the heater;

adjusting the source supplying direction of the source supplying device so that a projection of the source supplying direction on the plane of the substrate overlaps with the tangent of the circular trace at the point on the circular trace; and

heating the evaporation source by the heater for evaporation.

Claim 7. An evaporation apparatus for depositing a film on a substrate, the evaporation apparatus comprising:

a rotator driving the substrate to be rotating along an axis at the center of the substrate to define a circular trace on a plane of the top surface of the substrate by using the center of the substrate as the center of the circular trace;

a heater, disposed right under a point on the circular trace, wherein the heater has a source evaporation point thereon; and

a source supplying device, disposed over the heater, wherein the source supplying device supplies a metal wire as an evaporation source along a source supplying direction to a source evaporation point on the heater and a projection of the source supplying direction on the plane of the substrate overlaps with the tangent of the circular trace at the point on the circular trace.

(Emphasis added). Applicants submit that claims 1 and 7 patently define over the cited arts for at least the reason that the cited art fails to disclose at least the features emphasized above.

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In the present invention, as shown in Figs. 3 and 4, the source supplying device 230 supplies a metal wire as an evaporation source along a source supplying direction S directly onto a source evaporation point (one of points A, B and C shown in Fig. 4) on the heater 220 (paragraph [0017]). Notably, the heater is located right below the point on the circular trace on the substrate so that the supplied evaporated source is right under the point on the circular trace.

However, in citation, Kimiyama fails to teach or suggest that the pigment material 192 is **directly disposed on a steady point of the heater 204 or 206**. Instead, Kimiyama emphasizes that there is an intermedium, such as conveyer belt 196 (as shown in Fig. 8 of the citation) or rotary arms 226 (as shown in Fig. 9 of the citation), for delivering the pigment material **above** the heater. Besides, none of the evidence founded in Kimiyama's application shows that the projection of the direction along the reservoir 194 to the heater 204/206 on the top surface of the substrate 212 is overlapping the tangent line of the point, which is right above the heater 204/206, on the circular trace. That is, Kimiyama fails to point out the location relationship between the heater, the reservoir and the substrate.

Even people skill in the art modified Kimiyama's application, the modification result would not possess the same advantages as what claimed by the invention. Therefore, Applicants respectfully submit that Kimiyama neither anticipates the present invention nor legally renders the present invention unpatentable.

For at least the foregoing reasons, Applicants respectfully submit that independent claims 1 and 7 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 4-6 and 10-13 patently define over the prior art as well.

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The Office Action further rejected claims 2, 3 and 8-9 under 35 U.S.C. 103(a) as being unpatentable over Kamiyama taken in view of Yamazaki, Connell, Hirokawa or applicants' description of prior art. The Office Action also rejected claim 14 as being unpatentable over Kamiyama taken in view of Hirokawa.

Since claims 2, 3, 8-9 and 14 are dependent claims which further define the invention recited in claims 1 and 7 respectively, Applicants respectfully assert that these claims also are in condition for allowance according to the same reasons as discussed above for the rejections 102 and 103. Thus, reconsideration and withdrawal of this rejection are respectively requested.

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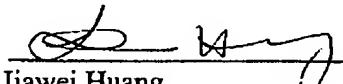
CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-14 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,
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